

## Chemical and Environmental Measurement Information

**Recra LabNet Philadelphia  
Analytical Report  
\*\*REVISION\*\***

**Client :** TNU-HANFORD B99-085  
**RFW# :** 9909L126  
**SDG/SAF #:** H0535/B99-085

**W.O. #:** 10985-001-001-9999-00  
**Date Received:** 09-17-99

**SEMIVOLATILE**

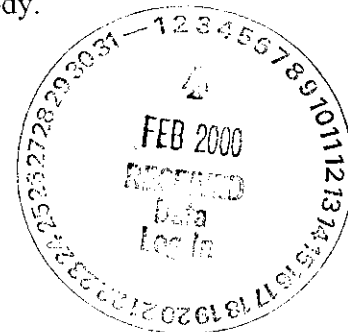
This narrative was corrected to add the TIC search for Tributylphosphate.

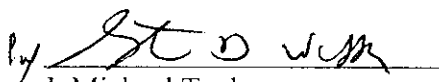
One (1) water sample was collected on 09-15-99.

The sample and its associated QC samples were extracted on 09-21-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B TCL Semivolatile target compounds on 10-04-99.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding times for extraction and analysis were met.
3. Non-target compounds were detected in these samples.
4. These samples were spectrally searched for Butylated Hydroxytoluene and Tributylphosphate; however, they were not identified in the samples.
5. All surrogate recoveries were within USEPA QC limits.
6. Two (2) of eleven (11) matrix spike recoveries were outside USEPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. Two (2) of eleven (11) blank spike recoveries were outside USEPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

**RECEIVED**  
MAR 20 2000**EDMC**

  
J. Michael Taylor  
Vice President  
Philadelphia Analytical Laboratory

pe:\group\data\bna\tnu09126.doc

01-27-00  
Date

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

## GLOSSARY OF BNA DATA

### DATA QUALIFIERS

<b>U</b>	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
<b>J</b>	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
<b>B</b>	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
<b>E</b>	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
<b>D</b>	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
<b>I</b>	=	Interference.
<b>NQ</b>	=	Result qualitatively confirmed but not able to quantify.
<b>A</b>	=	Indicates that a TIC is a suspected aldol-condensation product.
<b>N</b>	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
<b>X</b>	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
<b>Y</b>	=	Additional qualifiers used as required are explained in the case narrative.



## GLOSSARY OF BNA DATA

### ABBREVIATIONS

<b>BS</b>	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
<b>BSD</b>	=	Indicates blank spike duplicate.
<b>MS</b>	=	Indicates matrix spike.
<b>MSD</b>	=	Indicates matrix spike duplicate.
<b>DL</b>	=	Suffix added to sample number to indicate that results are from a diluted analysis.
<b>NA</b>	=	Not Applicable.
<b>DF</b>	=	Dilution Factor.
<b>NR</b>	=	Not Required.
<b>SP, Z</b>	=	Indicates Spiked Compound.



Initiator: J. Durbin RFW Batch: 9909L126 Parameter: BNA  
 Date: 10-5-99 Samples: MSD, BS Matrix: Water  
 Client: TNU Hanford Method: SW846/MCAWW/CLP/ Prep Batch: 99LE11SD  
899-085 cont

**1. Reason for SDR**

a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C  
☐ Transcription Error ☐ Wrong Test Code ☐ Other \_\_\_\_\_

**b. General Discrepancy**

☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible  
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold  
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle) ...signature/date: \_\_\_\_\_

**c. QC Problem (Include all relevant specific results; attach data if necessary)**

*MSD + BS yielded very low recoveries for  
 4-nitrophenol + pentachlorophend*

**2. Known or Probable Causes(s)**

*possible problem with prep*

**3. Discussion and Proposed Action**

Other Description: *Narrate*

☐ Re-log  
☐ Entire Batch  
☐ Following Samples: \_\_\_\_\_  
☐ Re-leach  
☐ Re-extract  
☐ Re-digest  
☐ Revise EDD  
☐ Change Test Code to \_\_\_\_\_  
☐ Place On/Take Off Hold (circle)

*[Signature]* 10/7/99

**4. Project Manager Instructions** ...signature/date: \_\_\_\_\_

☐ Concur with Proposed Action  
☐ Disagree with Proposed Action; See Instruction  
☐ Include in Case Narrative  
☐ Client Contacted:  
 Date/Person \_\_\_\_\_  
☐ Add  
☐ Cancel

**5. Final Action** ...signature/date: 10/25/99

Other Explanation:

☐ Verified re-[log][leach][extract][digest][analysis] (circle)  
☒ Included in Case Narrative  
☐ Hard Copy COC Revised  
☐ Electronic COC Revised  
☐ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

**Route Distribution of Completed SDR**

☒ Initiator  
☒ Lab Manager: M. Taylor  
☒ Project Mgr: Stone/Carey/Schrenkel/Johnson  
☒ Section Mgr: Wesson/Daniels  
☒ QA (file): Racioppi  
☐ Data Management: Feldman  
☐ Sample Prep: Schnell/Doughty/Kauffman

**Route Distribution of Completed SDR**

☐ Metals: Doughty  
☐ Inorganic: Perrone  
☐ GC/LC: Schnell  
☐ MS: LeMin/Taylor  
☐ Log-in: Toder  
☐ Admin: Soos  
☐ Other: \_\_\_\_\_

**Recra LabNet - Lionville Laboratory**

Semivolatiles by GC/MS, HSL List

Report Date: 10/25/99 17:22

RFW Batch Number: 9909L126

Client: TNU-HANFORD B99-085

Work Order: 10985001001

Page: 1a

CUO

Cust ID:		BOWCP8	BOWCP8	BOWCP8	SBLKDI	SBLKDI BS
Sample Information	RFW#:	001	001 MS	001 MSD	99LE1150-MB1	99LE1150-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L
Surrogate Recovery	Nitrobenzene-d5	98 %	91 %	91 %	83 %	85 %
	2-Fluorobiphenyl	79 %	77 %	75 %	77 %	67 %
	Terphenyl-d14	89 %	93 %	82 %	82 %	87 %
	Phenol-d5	82 %	83 %	79 %	81 %	69 %
	2-Fluorophenol	70 %	79 %	75 %	82 %	49 %
	2,4,6-Tribromophenol	73 %	93 %	68 %	69 %	56 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====						
	Phenol	10 U	76 %	76 %	10 U	65 %
	bis(2-Chloroethyl) ether	10 U	20 U	20 U	10 U	10 U
	2-Chlorophenol	10 U	73 %	74 %	10 U	59 %
	1,3-Dichlorobenzene	10 U	20 U	20 U	10 U	10 U
	1,4-Dichlorobenzene	10 U	72 %	72 %	10 U	48 %
	1,2-Dichlorobenzene	10 U	20 U	20 U	10 U	10 U
	2-Methylphenol	10 U	20 U	20 U	10 U	10 U
	2,2'-oxybis(1-Chloropropane)	10 U	20 U	20 U	10 U	10 U
	4-Methylphenol	10 U	20 U	20 U	10 U	10 U
	N-Nitroso-di-n-propylamine	10 U	98 %	87 %	10 U	71 %
	Hexachloroethane	10 U	20 U	20 U	10 U	10 U
	Nitrobenzene	10 U	20 U	20 U	10 U	10 U
	Isophorone	10 U	20 U	20 U	10 U	10 U
	2-Nitrophenol	10 U	20 U	20 U	10 U	10 U
	2,4-Dimethylphenol	10 U	20 U	20 U	10 U	10 U
	bis(2-Chloroethoxy) methane	10 U	20 U	20 U	10 U	10 U
	2,4-Dichlorophenol	10 U	20 U	20 U	10 U	10 U
	1,2,4-Trichlorobenzene	10 U	77 %	80 %	10 U	54 %
	Naphthalene	10 U	20 U	20 U	10 U	10 U
	4-Chloroaniline	10 U	20 U	20 U	10 U	10 U
	Hexachlorobutadiene	10 U	20 U	20 U	10 U	10 U
	4-Chloro-3-methylphenol	10 U	81 %	73 %	10 U	72 %
	2-Methylnaphthalene	10 U	20 U	20 U	10 U	10 U
	Hexachlorocyclopentadiene	10 U	20 U	20 U	10 U	10 U
	2,4,6-Trichlorophenol	10 U	20 U	20 U	10 U	10 U
	2,4,5-Trichlorophenol	25 U	50 U	50 U	25 U	25 U

\*= Outside of EPA CLP QC limits.

Cust ID:	BOWCP8	BOWCP8	BOWCP8	SBLKDI	SBLKDI BS
RFW#:	001	001 MS	001 MSD	99LE1150-MB1	99LE1150-MB1

2-Chloronaphthalene	10	U	20	U	20	U	10	U	10	U
2-Nitroaniline	25	U	50	U	50	U	25	U	25	U
Dimethylphthalate	10	U	20	U	20	U	10	U	10	U
Acenaphthylene	10	U	20	U	20	U	10	U	10	U
2,6-Dinitrotoluene	10	U	20	U	20	U	10	U	10	U
3-Nitroaniline	25	U	50	U	50	U	25	U	25	U
Acenaphthene	10	U	86	%	85	%	10	U	73	%
2,4-Dinitrophenol	25	U	50	U	50	U	25	U	25	U
4-Nitrophenol	25	U	32	%	0	* %	25	U	8	* %
Dibenzofuran	10	U	20	U	20	U	10	U	10	U
2,4-Dinitrotoluene	10	U	99	* %	84	%	10	U	69	%
Diethylphthalate	10	U	20	U	20	U	10	U	10	U
4-Chlorophenyl-phenylether	10	U	20	U	20	U	10	U	10	U
Fluorene	10	U	20	U	20	U	10	U	10	U
4-Nitroaniline	25	U	50	U	50	U	25	U	25	U
4,6-Dinitro-2-methylphenol	25	U	50	U	50	U	25	U	25	U
N-Nitrosodiphenylamine (1)	10	U	20	U	20	U	10	U	10	U
4-Bromophenyl-phenylether	10	U	20	U	20	U	10	U	10	U
Hexachlorobenzene	10	U	20	U	20	U	10	U	10	U
Pentachlorophenol	25	U	73	%	17	%	25	U	7	* %
Phenanthrene	10	U	20	U	20	U	10	U	10	U
Anthracene	10	U	20	U	20	U	10	U	10	U
Carbazole	10	U	20	U	20	U	10	U	10	U
Di-n-butylphthalate	1	J	2	J	2	J	10	U	10	U
Fluoranthene	10	U	20	U	20	U	10	U	10	U
Pyrene	10	U	94	%	83	%	10	U	88	%
Butylbenzylphthalate	10	U	20	U	20	U	10	U	10	U
3,3'-Dichlorobenzidine	10	U	20	U	20	U	10	U	10	U
Benzo(a)anthracene	10	U	20	U	20	U	10	U	10	U
Chrysene	10	U	20	U	20	U	10	U	10	U
bis(2-Ethylhexyl)phthalate	10	U	5	J	20	U	10	U	3	J
Di-n-octyl phthalate	10	U	20	U	20	U	10	U	10	U
Benzo(b)fluoranthene	10	U	20	U	20	U	10	U	10	U
Benzo(k)fluoranthene	10	U	20	U	20	U	10	U	10	U
Benzo(a)pyrene	10	U	20	U	20	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	10	U	20	U	20	U	10	U	10	U
Dibenz(a,h)anthracene	10	U	20	U	20	U	10	U	10	U
Benzo(g,h,i)perylene	10	U	20	U	20	U	10	U	10	U

(1) - Cannot be separated from Diphenylamine. \*= Outside of EPA CLP QC limits.

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WCP8

Lab Name: Recra.LabNet

Work Order: 10985001001

Client: TNU-HANFORD B99-085

Matrix: (soil/water) WATER

Lab Sample ID: 9909L126-001

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: A100410

Level: (low/med) LOW

Date Received: 09/17/99

% Moisture:        decanted: (Y/N)       

Date Extracted: 09/21/99

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 10/04/99

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 3

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.77	2	J
2.	UNKNOWN	7.94	3	J
3.	UNKNOWN	23.13	4	J

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKDI

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-085

Matrix: (soil/water) WATER

Lab Sample ID: 99LE1150-MB1

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: A100408

Level: (low/med) LOW

Date Received: 09/21/99

% Moisture:        decanted: (Y/N)       

Date Extracted: 09/21/99

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 10/04/99

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				



Recra LabNet - Lionville Laboratory  
 BNA ANALYTICAL DATA PACKAGE FOR  
 TNU-HANFORD B99-085

DATE RECEIVED: 09/17/99

RFW LOT # :9909L126

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWCP8	001	W	99LE1150	09/15/99	09/21/99	10/04/99
BOWCP8	001 MS	W	99LE1150	09/15/99	09/21/99	10/04/99
BOWCP8	001 MSD	W	99LE1150	09/15/99	09/21/99	10/04/99

LAB QC:

SBLKDI	MB1	W	99LE1150	N/A	09/21/99	10/04/99
SBLKDI	MB1 BS	W	99LE1150	N/A	09/21/99	10/04/99

9909L1260

A11

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) perone wet chem

RECRA  
LabNet

Client <u>Trou Hanford B99-085</u>		Refrigerator # <u>1 6</u>		Liquid <u>3v 200</u>		Solid <u>3P</u>		Liquid <u>1L</u>		Solid <u>1L</u>		Liquid <u>1L</u>		Solid <u>1L</u>	
Est. Final Proj. Sampling Date		#/Type Container		Liquid		Solid		Liquid		Solid		Liquid		Solid	
Project # <u>10985-001-001-9999-00</u>		Volume		Liquid <u>40ml 1L</u>		Solid		Liquid		Solid		Liquid		Solid	
Project Contact/Phone #		Preservatives		UNOS		ZNAC		UNOS		ZNAC		UNOS		ZNAC	
RECRA Project Manager <u>OJ</u>		ANALYSES REQUESTED		ORGANIC		INORG		Metal		CN		Sulfide		IC Anions	
QC <u>spec</u> Del <u>std</u> TAT <u>30 day</u>		Date Rec'd <u>9-17-99</u> Date Due <u>10/17/99</u>		VOA		BNA		Pest/PCB		Herb		Metal		CN	
Account #		Matrix		Date Collected		Time Collected		RECRA LabNet Use Only		Metal		CN		Sulfide	
MATRIX CODES:		Lab ID		Client ID/Description		Matrix QC Chosen (✓)		Matrix		Date Collected		Time Collected		RECRA LabNet Use Only	
S - Soil															
SE - Sediment															
SO - Solid															
SL - Sludge															
W - Water															
O - Oil															
A - Air															
OS - Drum Solids															
DL - Drum Liquids															
L - EP/TCLP Leachate															
WI - Wipe															
X - Other															
F - Fish															

## Special Instructions:

Ref # B99-085

9/23/99 - INH3Nackdel to cool per client req.

COMPOSITE  
WASTE

## DATE/REVISIONS:

OGCSC = 1-propanol, Ethanol

Met ① = As, Ba, Cd, Cr, Pb, Se, Ag, Cu,

3. Ni, V, Zn, Be

Ang ④ = ICCL, ICFL, ICNO2, ICNO3, ICPO4,

5. ICSEA, IPH, INH3N

6. Run matrix QC

## RECRA LabNet Use Only

Samples were:  
1) Shipped ☒ or  
Hand Delivered

Airbill # \*

2) Ambient or Chilled

3) Received in Good Condition ☒ or N4) Labels Indicate Properly Preserved ☒ or N5) Received Within Holding Times ☒ or N6) Received Within Holding Times ☒ or N7) Received Within Holding Times ☒ or N8) Received Within Holding Times ☒ or N9) Received Within Holding Times ☒ or N10) Received Within Holding Times ☒ or N11) Received Within Holding Times ☒ or N12) Received Within Holding Times ☒ or N13) Received Within Holding Times ☒ or N14) Received Within Holding Times ☒ or N15) Received Within Holding Times ☒ or N

## COC Tape was:

1) Present on Outer Package ☒ or N2) Unbroken on Outer Package ☒ or N3) Present on Sample ☒ or N4) Unbroken on Sample ☒ or N5) Unbroken on Sample ☒ or N6) Unbroken on Sample ☒ or N7) Unbroken on Sample ☒ or N8) Unbroken on Sample ☒ or N9) Unbroken on Sample ☒ or N10) Unbroken on Sample ☒ or N11) Unbroken on Sample ☒ or NDiscrepancies Between  
Samples Labels and  
COC Record? ☒ or N

NOTES: Sulfide bottle 1L

not 500ml as chain indicates

\*4235795295

Relinquished by	Received by	Date	Time
Ted Cy	Tracy	9-17-99	1020

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between  
Samples Labels and  
COC Record? ☒ or N

NOTES: Sulfide bottle 1L

not 500ml as chain indicates

\*4235795295

**FLUOR DANIEL  
FERNALD**

P.O. BOX 538704  
CINCINNATI, OH 45253-8704

CHAIN OF CUSTODY / REQUEST FOR ANALYSIS RECORD

REFERENCE DOCUMENT NO.:

SPL-99-0918

ORIGINAL REF NO.:

NA

CORRESPONDING REFERENCE DOCUMENT NO.:

PAGE 1 OF 1

RELEASE NO.: 1000019758	PROJECT NO.: 20200-PSP-0005	FOR SAMPLE RELATED PROBLEMS ACS CONTACT / PHONE: Audrey Hannum 4943	CONTRACT PURCHASE ORDER / TASK ORDER NO.: 96SB00217-034
PROJECT NAME: Area 3A/4A, Subsurface Prediction	REQUIRED REPORT DATE / LAB TAT: 21 DAYS	RECEIVING LAB NAME: RECRA	SAMPLE SHIPMENT DATE: 9-15-99
PROJECT CONTACT / PHONE: Christine Musserly 4619	RECEIVING LAB ADDRESS: LIONVILLE, PA, 19341	SAMPLE SHIPPER (Print): Ron Houston	OFF-SITE LAB CONTACT: BOB CAREY
CHARGE NO: 50331	LOT MARKING NO.: NA		
SAMPLING TEAM (Print) & GROUP NAME / PHONE: JOYCE GRACE / EM / SMP / 14848 / K. H. Rymer / EM 3267 / John VANDINE / B. B. Minges			
SAMPLING TEAM (Signature) & Badge No.: Joyce Grace 10781 / K. H. Rymer 9388 / Dr. Vandy 5536 / D. H. 76551			

ITEM NO.	SAMPLE NUMBER		SAMPLE MATRIX	C O L L E C T I O N	F I L T E R E D	COLLECTION		CONTAINER	NO CONTAMINANTS	PRESERVATION	A S L	ANALYSES REQUESTED  If more space is required, use the SPECIAL INSTRUCTIONS block	LAB	OFF-SITE
	FACTS ID	CUSTOMER ID / SAMPLE POINT				DATE	TIME							
1	200361617	12483-6B-L	S soil	✓	N	09/13/006		G 60	1	Cool 40C	B	*	Y	Y
2	200361613	3A4A-SUB-TB5	W water	✓	N	09/13/0830		G 40	3	H <sub>2</sub> SO <sub>4</sub> pH < 2 Cool 40C	B	*	Y	Y
3	No samples below this line Jeg 09/13/99													
4														
5														
6														
7														
8														
9														
10														

SPECIAL INSTRUCTIONS: \* TAL I = Total volatiles \*\* All Trip Blanks have bubbles

RELINQUISHED						RECEIVED					
ITEM / REASON	RELINQUISHED BY (Signature) / AFFILIATION		BADGE NO.	DATE	TIME	RECEIVED BY (Signature) / AFFILIATION		BADGE NO.	DATE	TIME	
1, 2, Release to SPL	[Signature] ERM / SMP		76951	9/14/99	1307	Karen Heffner / SPL		7706	9/14/99	1307	
1, 2 TO SHIP	[Signature] SPL		76719	9-15-99	1300	[Signature]					
						Janson			9/16/99	0930	

WHITE

ON-SITE - RELEASE FILE / OFF-SITE ANALYTICAL LAB - RETURN TO FEMP

YELLOW

ON-SITE - DISTRIBUTE AS NEEDED / OFF-SITE ANALYTICAL LAB - RETURN TO FEMP

BLUE

SAMPLING TECH / PROJECT FILE